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Highlights of his / her research (not more than 100 words) .....

With the aid of metal oxide (TiO_2, ZnO) nanostructured thin film the detection of carcinogenic aromatic hydrocarbons (benzene, toluene, xylene) with acceptable response towards low concentration (~1ppm) is the broad objective of the research work. To ensue this, growth and material characterization of different nanostructures (nanaogrannule, nanotube, ruptured-nanotube, nanorod) was incorporated and fabricated different devices (Planar, MIM, MIS). For sensor characterization, resistive and capacitive measurements were carried out. The quantification of the equivalent circuit of the sensor device wasachieved via ac-analysis whereas better response was achieved from the dc-measurement of the ruptured-nanotubes owing to extensive free-energies at edges and corners.

Representative best pictures/ plot/graph with proper heading : 2 - 4 nos.

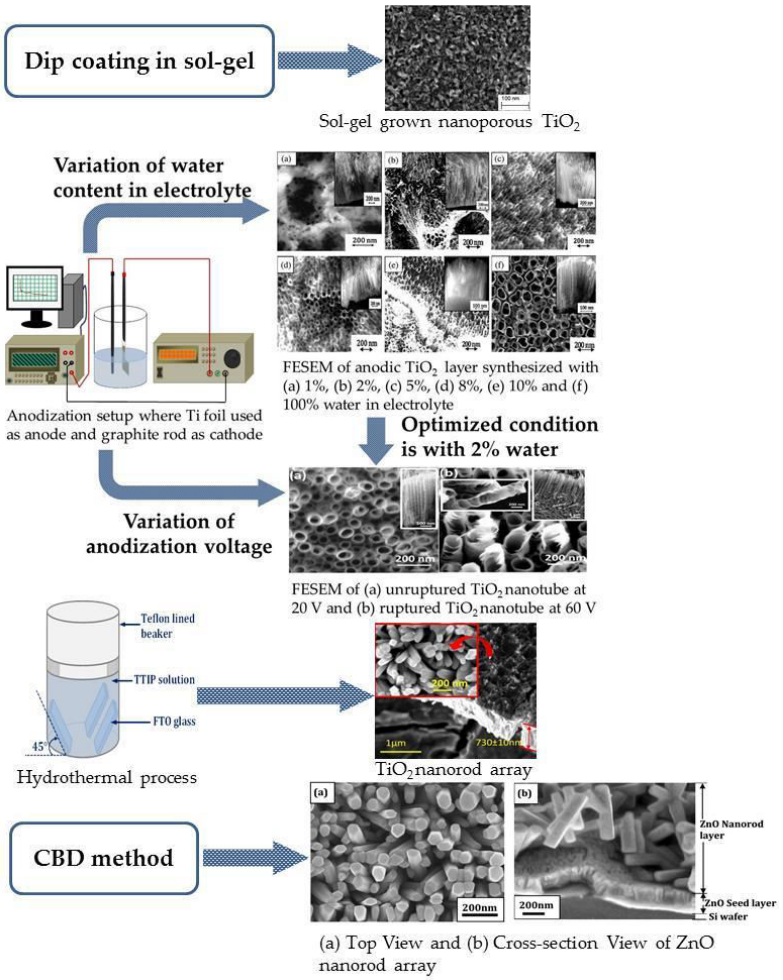

Fig.1. Different oxide growth technique and corresponding nanostructures

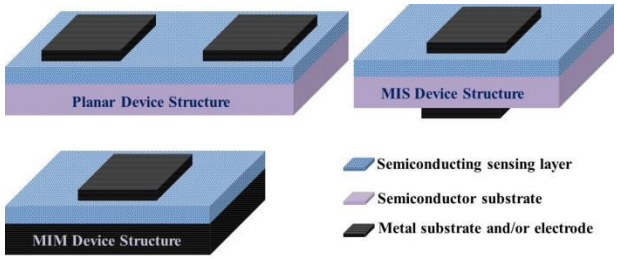

Fig.2. Different device structures employed in gas sensing performance

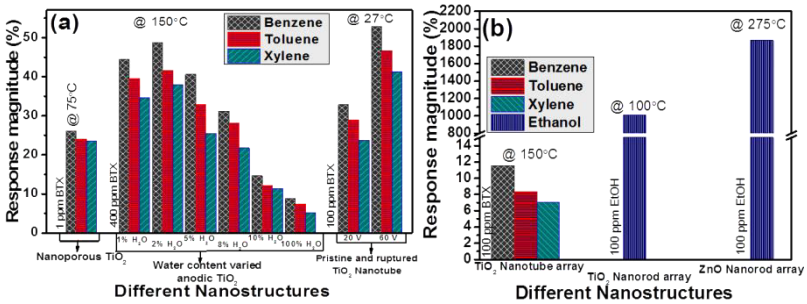

Fig.3. Sensing performance of different devices in (a) resistive mode and (b) capacitive mode

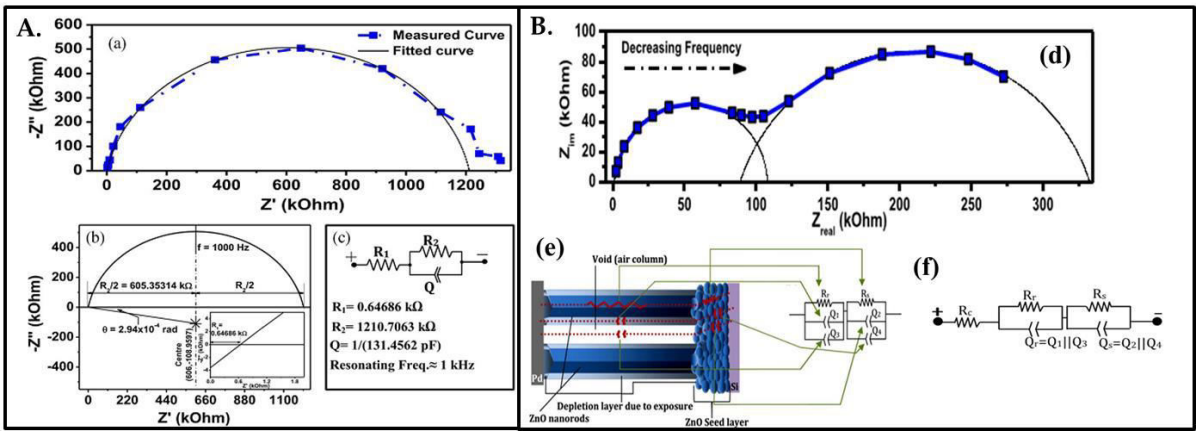

Fig.4. Equivalent circuit analysis for (A) TiO2 nanotube based MIM device :(a) Cole-Cole plot, (b) analysis on fitted curve and (c) quantified equivalent circuit AND (B) ZnO nanorod based MIS device: (d) Cole-Cole plot, (b) correlation with physical nanostructure and (c) quantified equivalent circuit.

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